Name: ____________________________________________

SHOW ALL YOUR WORK. NO WORK MEANS NO CREDIT!

1. (3 points) Let \( f(x) = x^4 - 3x^3 + 2x^2 - x + 1 \). Find \( (f^{-1})'(-1) \) at the point \( x = -1 = f(2) \).

2. (2 points) Evaluate the following integral: \( \int_{0}^{\pi} \frac{9 \cos x}{2 - \sin x} \, dx \).
3. (2 points) Differentiate \( f(x) = (2x)^2 \sec x \).

4. (3 points) Solve the initial value problem

\[
\frac{dy}{dx} = e^{-2y} \sin \left( \frac{x}{2} \right), \quad y(\pi) = 0.
\]